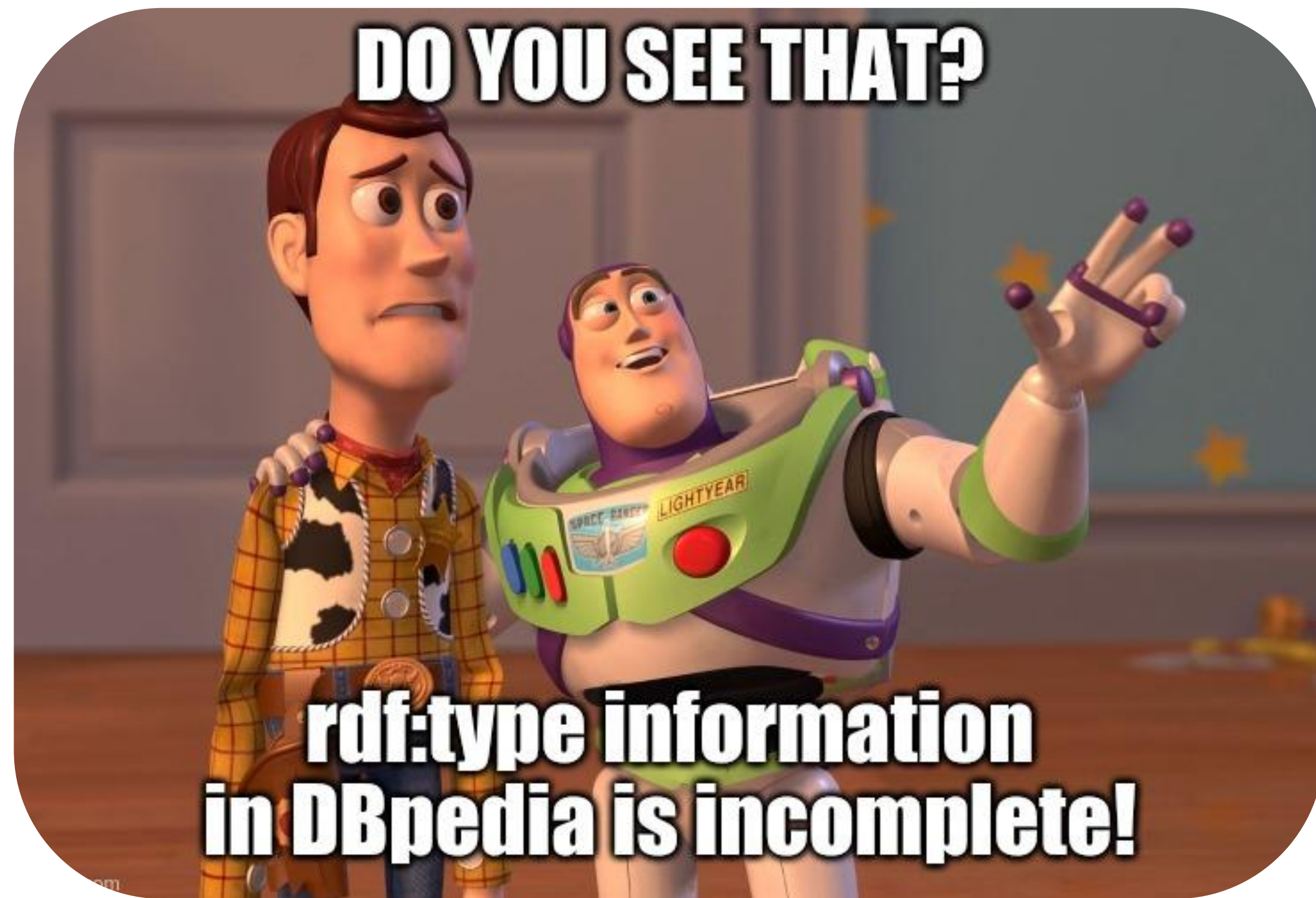


Entity Typing based on RDF2Vec using Supervised and Unsupervised Methods

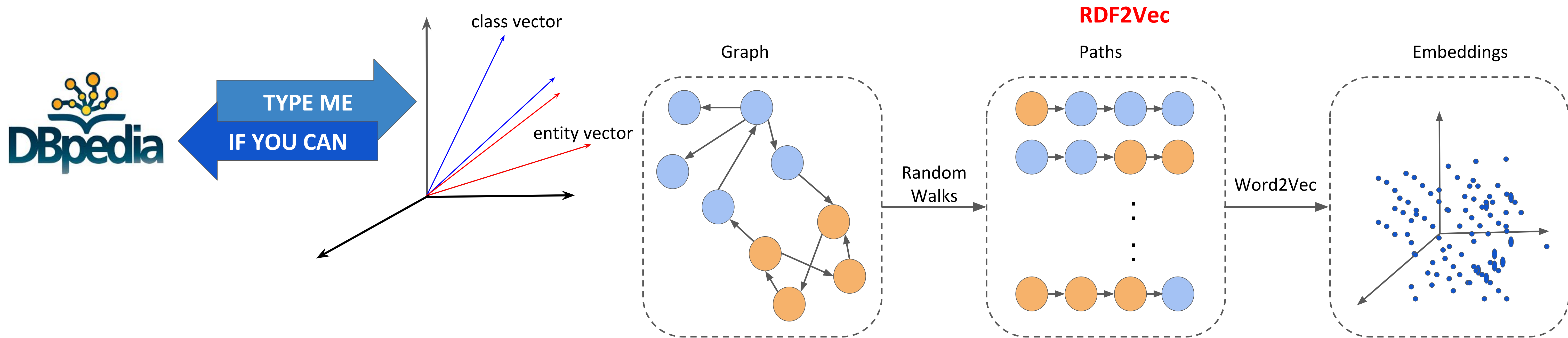
Radina Sofronova^{1,2}, Russa Biswas^{1,2}, Mehwish Alam^{1,2}, Harald Sack^{1,2}

¹FIZ Karlsruhe, ²Karlsruhe Institute of Technology (KIT), AIFB, Karlsruhe, Germany
radina.sofronova@student.kit.edu, {russa.biswas, mehwish.alam, harald.sack}@kit.edu

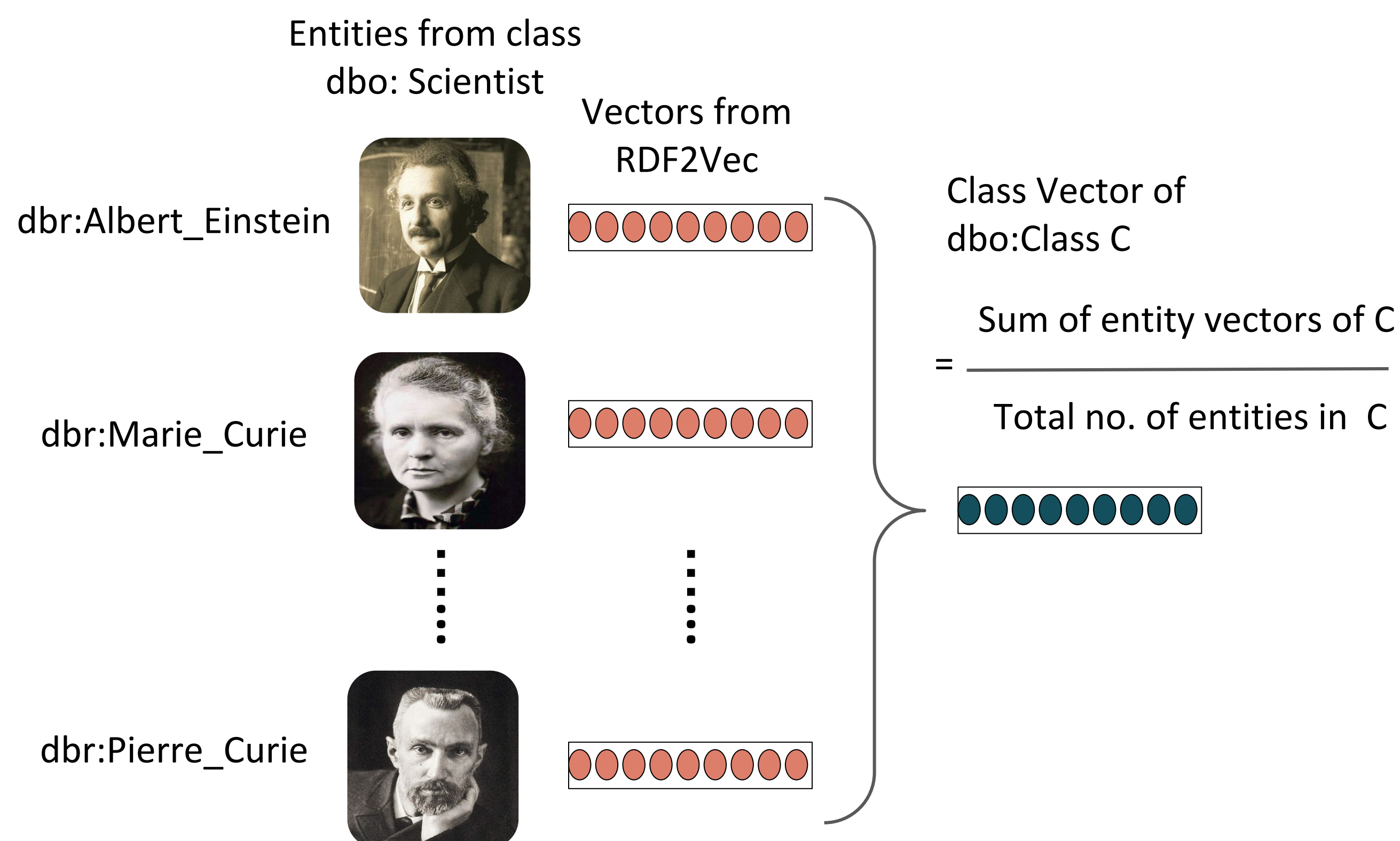
Motivation



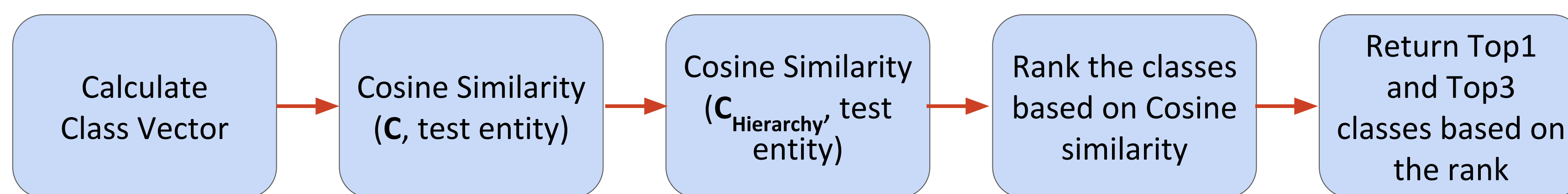
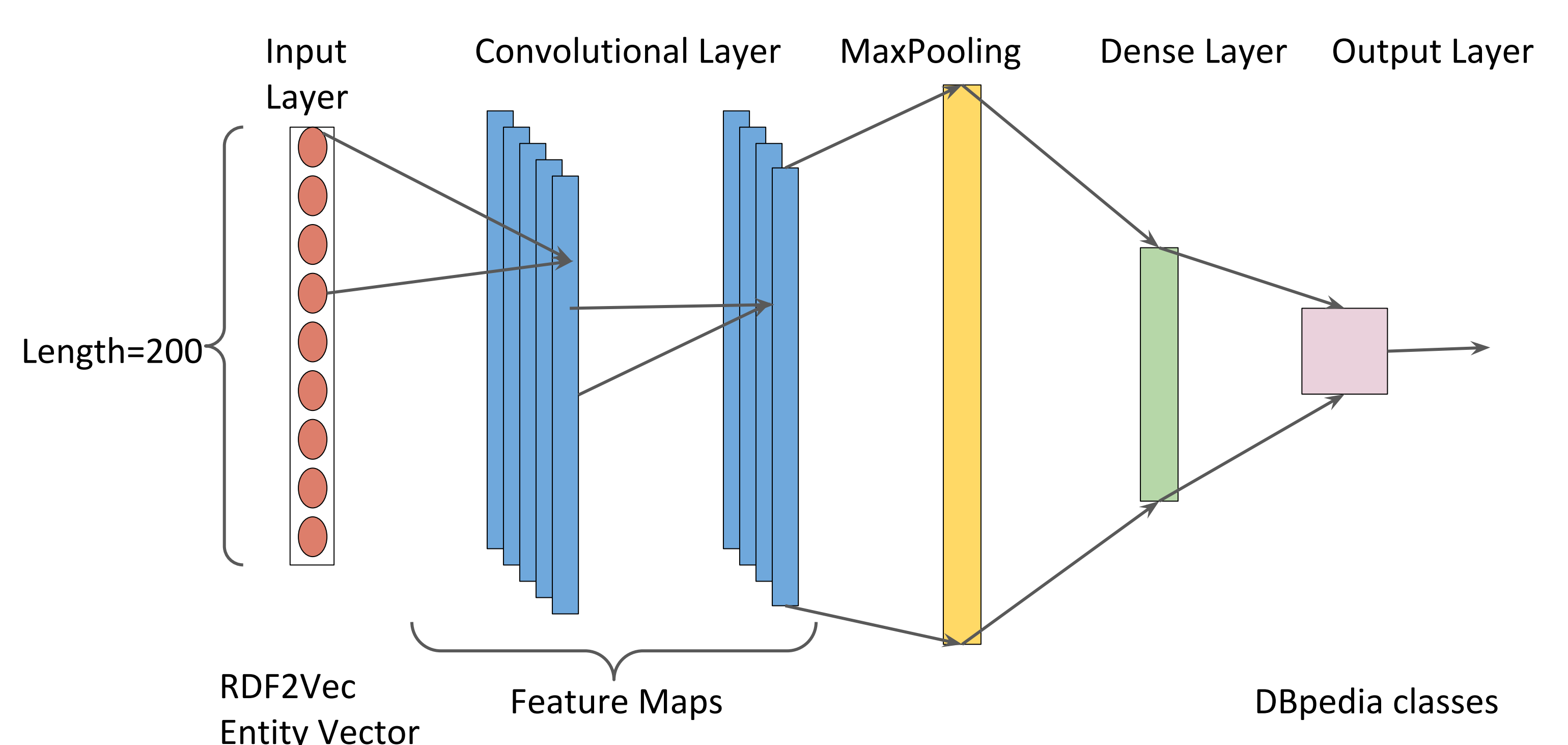
Entity Type Prediction



UNSUPERVISED APPROACH - Vector Similarity



SUPERVISED APPROACH - 1D CNN



Experiments and Results

EXPERIMENTAL SETUP

- **Datasets** : 3 datasets with 500, 2k and 4k entities per class respectively
- Uniform **RDF2Vec** pre-trained word vectors of dimension 200 have been used
- **Vector similarity** with original RDF2Vec class vector and with a generated class vector as average of the entity vectors using set theory
- **1D CNN** with 80% data as train set and 20% data as test set

TAKE-AWAY

- **Best results** achieved with vector similarity when the set theory concept is applied to generate the class vectors from the pre-trained entity vectors

Dataset	RDF2Vec				
	Vector Similarity				CNN
	With Original Class Vector		Class Vector as average of entity vectors		
	Hits@3	Hits@1	Hits@3	Hits@1	
59 classes, 500 entities/class	68.91%	21.63%	95.63%	86.51%	81.78%
86 classes, 2k entities/class	34.74%	12.26%	84.78%	74.9%	53.67%
81 classes, 4k entities/class	32.51%	11.01%	84.61%	74.33%	53.49%

Image References:

[1] https://en.wikipedia.org/wiki/Catch_Me_If_You_Can#/media/File:Catch_Me_If_You_Can_2002_movie.jpg

[2] https://en.wikipedia.org/wiki/Lisbon#/media/File:Montagem_de_Lisboa.png

[3] https://en.wikipedia.org/wiki/Violin#/media/File:Violin_VL100.png

[4] https://en.wikipedia.org/wiki/Pierre_Curie#/media/File:Pierre_Curie_by_Duiardin_c1906.jpg

[5] https://en.wikipedia.org/wiki/Fe_del_Mundo#/media/File:Fe_del_Mundo.png

[6] https://en.wikipedia.org/wiki/Anselm_Hollo#/media/File:Gloria_Graham_Anselm_Hollo.jpg

[7] https://en.wikipedia.org/wiki/Albert_Einstein#/media/File:Einstein_1921_by_F_Schmutzer_-_restoration.jpg

[8] https://en.wikipedia.org/wiki/Marie_Curie#/media/File:Marie_Curie_c1920.jpg